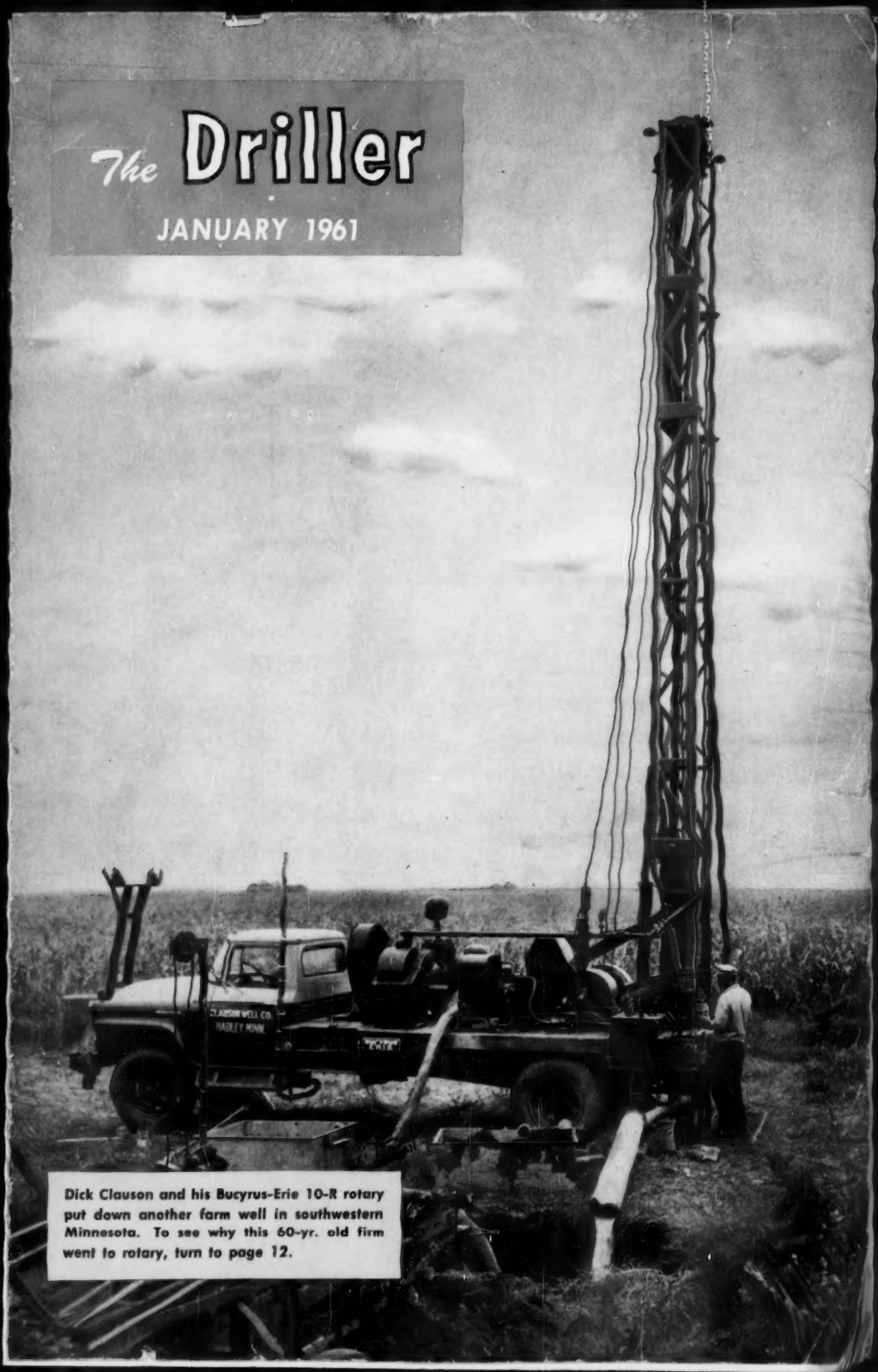
The Driller

JANUARY 1961



Dick Clauson and his Bucyrus-Erie 10-R rotary put down another farm well in southwestern Minnesota. To see why this 60-yr. old firm went to rotary, turn to page 12.

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The Driller

January 1961

Vol. 35 No. 1

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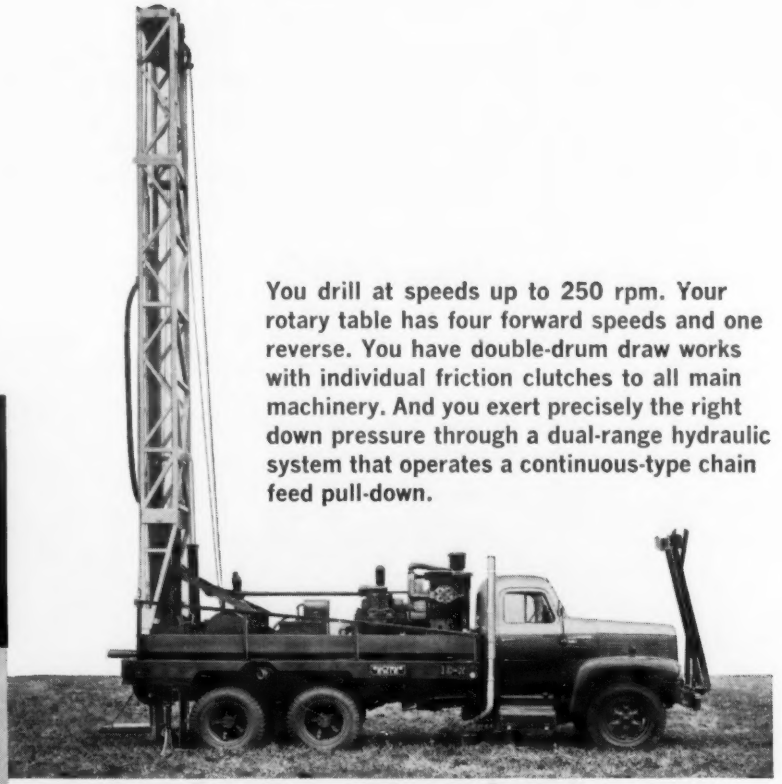

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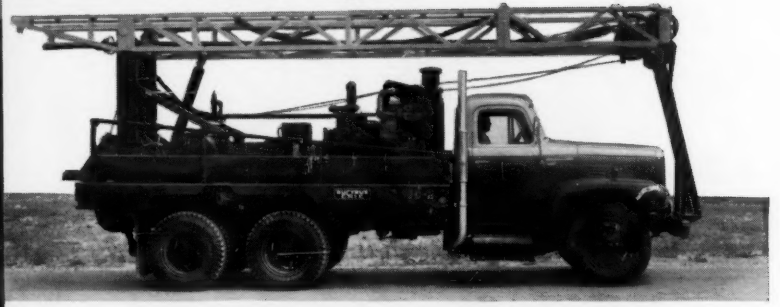

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Pump Makers Plan Educational Program

Seek to save water well industry from threat posed by recent FHA well bans in some areas.

AN EDUCATIONAL program designed to combat recent FHA rulings that tend to put private water systems in an unfavorable light was called for at the annual convention of the National Association of Domestic and Farm Pump Manufacturers held Oct. 24 and 25 in Pittsburgh. The two sessions were the association's second annual industry development conference.

The association's research and development committee, formed last summer to cope with local FHA regulations on private water supply, recommended the new program to tell the facts about individual systems to those who regulate the use of private water sources.

Part of the emphasis will be directed toward showing how automatic water treatment devices can easily be made part of the individual water system, a precaution the NADFPM is strongly recommending to water well drillers to guarantee that private water sources will continue to be as safe and pure as they were when first put into operation.

It was pointed out that FHA directors in Washington have warned that these restrictions, now in effect in parts of Minnesota, Connecticut and several other states, are not just a local matter. S. A. Bunis, chairman of the industry development conference, warned, "They plan to put us out of business because our equipment, according to them, is 'too dangerous.'"

It was stressed that the educational program is not an "anti-municipal-well campaign." The program will stress that the well drilling and water systems industries can supply water of equal purity and quality at a cost equal to or less than the cost of water provided by a municipality.

The objectives the committee outlined for the new educational program are conservation of ground water supply, stressing advantages of a private water supply during emergency periods, and cooperative education work with trade associations and related industries.

They recommended the emphasis be placed on water quality and purity; proper selection and installation of water systems equipment; good well construction; methods of water treatment; improved national, state and local regulations; informing the public of the progress of the industry's products; and service and professional planning for water systems.

The program should be taken to public health and FHA officials, as well as government committees such as the senate select committee on water resources, the committee added.

The research and development committee's program includes an operations guide, already available and being distributed to member com-

panies, that will be useful in attempts to anticipate or modify new FHA regulations wherever they occur.

In the next few months the association will undertake a direct mail campaign to reach state health officers and chief engineers, county agents and local sanitarians. The association will ask each state sanitation engineer for the chance to educate his state sanitarians through a one-day short course on water supply and purification. Such courses will bring them up to date on pumps, wells and water treatment.

An important part of the association's education effort is the "Water System and Treatment Handbook," a new text prepared to be used with these short courses. It was distributed to members during the annual meeting.

A panel of members of the Connecticut Well Drillers association described the situation that the FHA has brought to them in that state and outlined their steps to combat what they consider improper restrictions.

Program Discussed

A panel from the Minneapolis-St. Paul area also discussed their program designed to combat an FHA ruling that recommended private water supply be used only as a last resort. The two groups offered assistance to those in other areas where similar problems may arise.

G. A. Patterson, chairman of the research and development committee, pointed out the opportunity that exists for water systems dealers in getting into the water treatment business. He added that the water conditioning industry is just getting started and that it exists as a new source of business for water systems dealers.

F. B. Hout, past president and a director *ex officio* of the association pointed out that 1,000 communities in 47 states have an actual water shortage, that 15 out of 100 people don't have the amount of water available to them they should have.

Three-quarters of the new housing in the last 10 years has taken place in suburban or rural areas, Hout said. These homeowners need the water systems industry, for central water systems and sewage plants can't keep up with their needs.

Municipalities Are Behind

John Hosford, executive vice president of the association, pointed out that evidence shows that municipalities are far behind in getting bond issues to support needed improvements in water treatment plants. "It's foolish to imagine," he declared, "that the private water system can be eliminated as one of the most valuable sources for water supply."

The annual election of officers for 1961 placed R. W. Lewis, Fairbanks, Morse & Co., Chicago, Ill., in the office of president; Louis Wozar, Tait Manufacturing Co., Dayton, Ohio, vice president; and Clarence Mark, Clayton Mark & Co., Evanston, Ill., treasurer.

Elected to serve as directors for three-year terms were M. T. Jensen, Aermotor Co., Chicago, Ill.; and E. M. Myers, F. E. Myers & Bro. Co., Ashland, Ohio. Kenneth Nichols was named to fill a one-year vacancy on the board of directors left by Louis Wozar.

The NADFPM met in Pittsburgh at the same time as the National Water Well association's 1960 convention. Its next meeting will be held Feb. 1 and 2 at the Drake hotel in Chicago.

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Pioneer Driller: 1961 Style

Tough competition and tricky glacial drift offer Minnesota driller Dick Clauson a real challenge. To beat both he decided on a new model rotary rig.

Clean water *and plenty of it was the* goal of B. O. Clauson for 55 years. Successful job above was achieved with a 1911 Sparta No. 5 rig. Powered by a 25-hp double cylinder engine, the *self-propelled rig traveled at a top* speed of 2 mph. The senior Clauson started drilling business in 1900 with a used wooden rig and two horses.

Up she goes. Clauson's 10-R sets up fast as hydraulic lift swings the long 38-ft. mast into position.

MANY people today tend to think of pioneers only in connection with trail blazing and covered wagons. They also think that pioneering is pretty much a thing of the past—something no longer possible because all the trails have been blazed. They couldn't be more wrong.

At least when it comes to Dick Clauson of Hadley, Minn., they couldn't be. Clauson just happens to be in a business that has always needed pioneers and always will. He is a water well driller. What's more, he is a driller in a tough formation area, one that presents a new challenge on every job. If this isn't enough, the competition here is as tough as the tricky glacial drift. To beat both conditions a driller needs two things—good equipment and pioneer spirit.

Pioneer spirit probably sounds vague, so it should be defined as it is used here. It is really very simple.

The elements are few. All you need to be a pioneer is (1) a clear objective, (2) a willingness to work hard and (3) enough courage to try something new.

The something new for Clauson was a new model rig—a Bucyrus-Erie 10-R. He was the first driller in the world to own one so he couldn't compare notes with other drillers before buying.

He had considered going rotary for a long time. A fast, powerful rig is essential today just to keep up with the competition. The only trouble was, the rig Clauson wanted just hadn't been invented yet. All the rotaries up till this time were the wrong size for his particular operation. Then last spring it happened: Bucyrus-Erie announced production of a new rig—the 10-R. One look at the specifications and Clauson knew this was his machine. It fitted his needs to a "T" and, better yet, the 10-R was a rig a small driller could afford.

When he called his distributor, R. R. Howell Co. in Minneapolis, he had only two questions to ask — "How much?" and "when can I pick it up?" After a brief conversation, Clauson had decided. "Put me down for the first one," he told the salesman, "this isn't the time for hesitation."

Clauson describes his need for the new rotary as an answer to the terrific competition in the Midwest. A good rig that can put a hole down fast is the only way to beat the price cutters at their game. Equipment and operating costs are higher today than they have ever been while, at the same time, drilling prices have remained low. The main cause of this, Clauson says, has been the infiltration of drillers with small investments in their rigs who could afford to take a job at a very low cost. A driller today can't save on cost so he must save on time, and that's where the rotary driller comes in.

Clauson never has attempted to match prices or bargain for a well. He knows what the job will cost him and what he should be paid. Yet, he did not want to keep raising his prices as costs skyrocketed. His customers are, for the most part, small farmers and unable to afford too costly a well. His problem was to keep prices low enough for his farm customers but high enough to be profitable. By carefully matching the drilling rig to his needs, he feels he can do both.

Dick had put down hundreds of wells over the years but always with cable tools. Anyone watching him operate his new rotary would believe he had been doing it all his life. He and the machine are a team—a team in which he claims to be the lesser member. When he talks about his new 10-R there is a tone of pride in his voice. To anybody willing to listen he gladly explains the many features of this new rig.

When *The Driller* called on Clau-

Thousand-pound stabilizer provides extra pressure to get the job done. In most cases, weight of tools is all the pressure Clauson uses.

son, he was using the 10-R on a tough farm job. It is often difficult to locate a driller at work on a small farm on unfamiliar back roads. Not so in this case. The usually quiet farmyard just south of Iona, Minn., looked like a city parking lot. Farmers who usually work from sun to sun every day found an excuse on that day to visit the Axdahl farm. Word about Clauson and his new rig that "puts 'em down fast" had spread rapidly all over Murray county and a good portion of the farm work in the area came to a temporary halt. The standing joke of the day was that if Axdahl had charged admission he could have paid for his well.

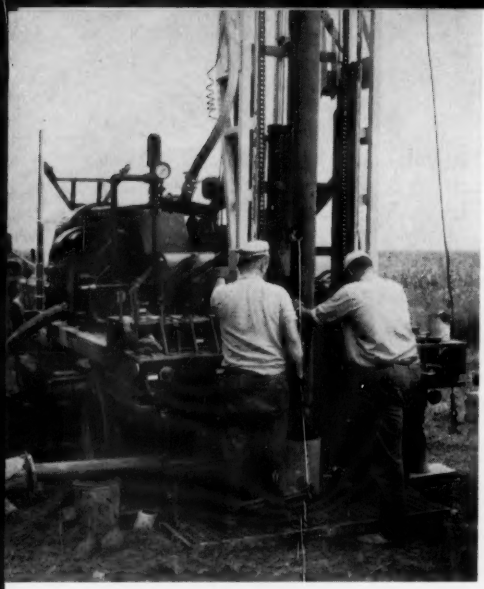
This wasn't just another job for Clauson. It was one that he had pondered for some time—a real trouble spot with a long history of defeating drillers. For 25 years this farm had never really had enough water. By the time Clauson was called in, the problem had reached alarming proportions. The lack of enough water for their livestock was so serious, in fact, that the Axdahls were hauling water in tanks from a neighboring farm during periods of dry weather.

Driller Defeated

An earlier attempt to find water near the house had ended up with nothing but a 420-ft. dry 4-in. hole, stuck pipe and a defeated driller. The Axdahls next called in an auger driller "who always got water." This unfortunate fellow chose a spot downhill from, and about 100 yards south of, the farmhouse to try his skill. After gouging out the tough soil to a depth of 150 feet, he too packed up his rig and called it quits — with no water produced but the sweat on his brow.

Clauson moved in with his new 10-R expecting the worst. Both he and his father before him have kept complete records of their operation so he knew pretty well what material he would go through and how far. This southwestern corner of Minnesota is part of the large area covered several times by the polar icecaps, so anyone drilling here can expect only one condition for sure — the unexpected. For instance, the deepest hole Clauson ever drilled ended up 600 feet down as a dry hole. He ran into quicksand cave-in material and lost 200 feet of 6-in. pipe. After moving the rig over 300 feet he put down a 248-ft. deep producing well. Stranger still, he later sunk a good well only a quarter-mile away which came in at 49 feet.

The deepest producing well in Clauson's record book is 522 feet.



Helper Harlan Hanson (above) guides the tools as Clauson lowers Hughes bit into the hole. (Right) The new 10-R attracts farmers from all over Murray county. Machine itself sells contracts to many potential customers.

Drilling time was short, he says, but it was tough going all the way with the tools pounding through 495 feet of glacial drift and 27 feet of granite. On another job in the same general area, he had just gotten underway when the well came in at only 21 feet.

Rig Flooded

He has other stories, too, which point up the varied results a driller can expect in this area. One of the strangest incidents occurred at Marshall, the county seat. He finished a job there at noon on a Saturday but left his rig, intending to pick it up on the following Monday. On Sunday afternoon he and his family took a ride and drove past the spot where the rig had been left. To their amazement, what had been dry land was now a small lake and there in the center, a strange looking craft, Clauson's 22-W! During the night a flash flood had swept over the area nearly washing away the rig. It certainly didn't look like the proper place to sink a water well.

Anyone watching Clauson set up his new rotary has to pay strict attention or, before they turn back, the job is finished — it's that fast. No guy wires to string, hydraulic lift for the mast and quick setting jacks make the set-up easy, Clauson says. On this job there happened to be a small trenching machine at hand so, rather than using his tanks, Clauson dug two mud pits.

Clauson's helper, Harlan Hanson, is the son of a driller in the next coun-

ty. He also works with his dad, of course, but says he enjoys the chance to learn rotary drilling by working with Clauson whenever possible. The two men are an efficient team. Each knows the routine well and the job of setting up and drilling is accomplished quickly with few instructions given.

A Hughes Tricone medium formation bit cut the 8½-in. hole with ease. Standing back a few yards you hardly realize that the rig is drilling—it's that quiet. At peak, the drill rod was moving down at a rate of one foot a minute. When the bit found an occasional boulder, the only indication of tough going was a slight shudder of the rig accompanied by the clanking of the pull-down chains. Usually boulders do not slow the rate of drilling for long. In fact, that is when Clauson's new rig shows its stuff.

For normal drilling, the only down pressure Clauson uses is the weight of the tools which include a 1,000-lb.

Clauson checks the controls as the 10-R quietly grinds its way to water. When the bit hits a boulder, he decreases rpm and applies down pressure.

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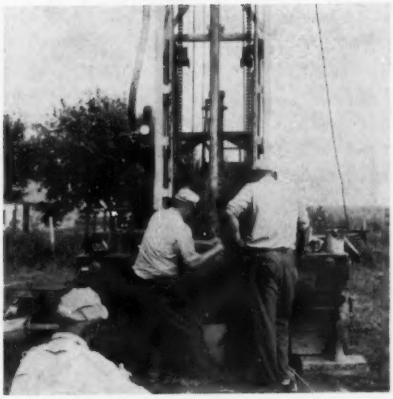
stabilizer. If the going gets rough, as in the case of a boulder, Clauson decreases the rpm and applies down pressure. In most cases, the bit chews on through in a few seconds, the down pressure is released and rotary speed resumed. Sometimes, though, a sharp angular rock will temporarily slow up the drilling rate by moving along ahead of the bit. Clauson had gone down about 120 feet in a few hours without any trouble when this occurred. Only 15 feet of pipe went down in the next hour before the obstruction finally stopped moving in front of the bit and gave way.

Clauson calls himself "as fussy as an old maid" when it comes to job conditions. He therefore took advantage of the driller's platform offered as an optional 10-R feature. Other optional features on his rig are: a long 38-ft. mast which enables him to use 20-ft. drill rod, a 23-ft. grooved Kelly and the optional sand reel.

He is meticulously careful with his tools and machinery. Every tool has its proper place and all are put back clean after they are used. He firmly believes in keeping up the appearance of his rigs. Good equipment in good shape, he says, plays a big part in keeping up with, or ahead of, his competition. A well maintained machine, clean and properly lubricated, gives a driller the maximum performance he needs on a job.

The meticulous care Clauson gives his equipment pays off constantly. His farm customers are men who love machinery, and their interest in Clauson's new rotary has alone led to many new contracts. The spanking bright new rig purring efficiently on a job is more than enough advertising for Clauson. As he says, "it's the best salesman I ever had. The customers are fascinated. They always enjoyed watching me hang on a cable, up-and-down, up-and-down. Most of them never saw a rotary in action before and the steady, quiet down, down, down, amazes them."



Another 20-ft. section of pipe is tightened and ready to go down. Optional driller's platfom is necessary for those who like to keep their feet dry on a job.

Besides the 10-R, Clauson owns a 1957 22-W, a 1950 Chevrolet pick-up truck and an old 1½-ton International flat-bed truck. The pick-up is equipped with a derrick and winch and serves as his pump service truck. The International functions as a water supply and pipe truck. Needless to say, Clauson's older equipment is given the same careful treatment as his new. In fact, the three-year-old 22-W looks like it just rolled off the assembly line.

Caution is the watchword in his drilling procedure, too. Speed is more often than not wasteful drilling in the tricky glacial drift where a bearing formation can easily be missed. The Axdahl job was to be finished open end. Clauson says he rarely uses a

screen. He also planned to line the 8½-in. hole with 6⅝-in. O.D. casing.

The only sour note connected with the new 10-R, claims Clauson, is that his dad didn't live to see it. To a man who started out in 1900 with a used wooden rig and two horses, the speed and power of this rotary would have been a joy to behold. His dad loved machinery and he loved drilling. Producing good clean water for people was to him one of the finest professions a man could seek. He was the real pioneer, Clauson says, he had to be.

Work Builds Business

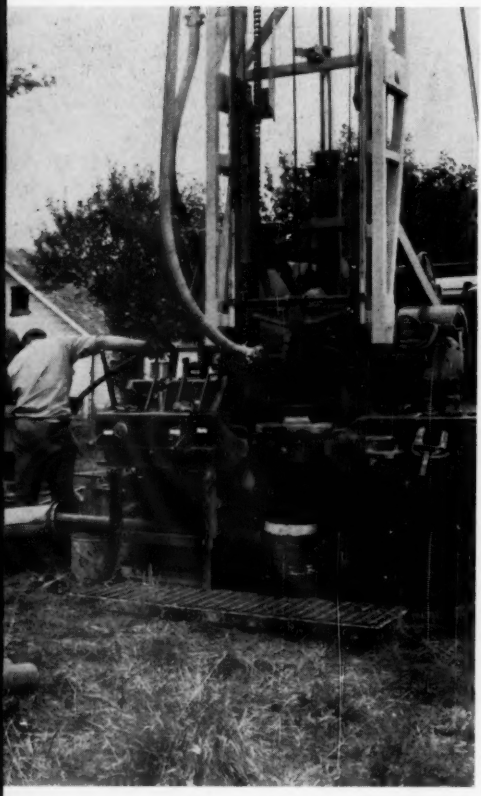
Only 18 when he started on little more than a shoestring, he built the business up by sheer hard work. A few years after starting he switched to steam rigs but had poor luck with these. Boiler troubles were a constant annoyance and power was poor. By 1911 B. O. Clauson had succeeded enough to invest in a big Sparta No. 5. This was quite a rig, Clauson says. It was equipped with 2⅛-in. Manilla rope and powered by a 25-hp double cylinder engine. The self-propelled rig traveled at a top speed of 2 mph.

The next machine of note in the Clauson string was a 1929, B-15 Dempster. "Rough going, but effective," Clauson says, "and it put down holes up to 8 inches in diameter." Clauson figures his dad produced about 2,000 wells during his career.

Dick served in World War II as a transport pilot in the Pacific, and when he returned home he was uncertain about what he would do in the future. He entered the University of Indiana and did well in his studies; but, as he puts it, "you don't grow up hanging on a drill cable and then just decide to quit that easily." Then too his father was getting old and needed help. After 47 years, the Clauson water well business was highly respected and depended upon by the farmers of Murray county and, although he never insisted, the elder Clauson would have been hurt to see the business die with him.

So Dick went into partnership with his dad in 1947. They bought their

With mud pits dug and water supply truck in position, Clauson adds bentonite to make mud. Customer and his sons helped dig pits with an old trencher that was available.



first Bucyrus-Erie machine—a 22-W. This machine gave such good service that Dick ordered a second 22-W in 1957. In the interim, many things happened. In 1952, the senior Clauson had a heart attack and was forced into partial retirement. By 1955 he could no longer work and Dick bought the business in April of that year.

Dick says that his dad was actively interested in every phase of water well drilling. He was a charter member and vice president of the Minnesota Water Well Drillers association.

(Continued on page 32)

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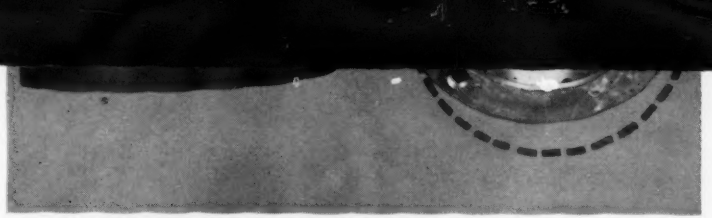
NEW exclusive automatic overload in motor (in sizes through 1 h.p.) gives protection 15 times as fast, guards instantaneously against



Important new advances in the design and construction of Rapidayton 2-wire and 3-wire submersibles herald a NEW ERA of performance and profit. NEW automatic overload protection in the motor (in sizes through 1 h.p.). NEW loose tube construction for quick, easy disassembly at well site. NEW models for wide variation in voltage. NEW deeper settings. NEW higher performance, greater dependability. These, and other, years-ahead advances open a NEW ERA for submersibles. Now, more than ever, it is easier and more profitable to sell the leader: Rapidayton.

NEW loose tube construction (right) makes Rapidayton easiest sub in the world to disassemble at well site. Just unscrew pump tube from motor casting, then tube and stages can quickly and easily be taken up off motor shaft.

39 MODELS TO CHOOSE FROM

The complete Rapidayton 4" sub line has been expanded to 39 models: The highly-competitive 2-wire "Star" series, 5 models; 2-wire "Dolphins*," 11 models; 3-wire "Dolphins," 23 models. Four capacity series: 5, 10, 18, and 25 gallons per minute. Total head, 1000 feet. Get your **exact** needs from Rapidayton.

Rapidayton

division **The Tait Manufacturing Company, Dayton 1, Ohio**

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*TRADEMARK

Colorado driller solves hard rock drilling problems, saves time and backaches when he answers this question:

Does a Bit Dresser Pay?

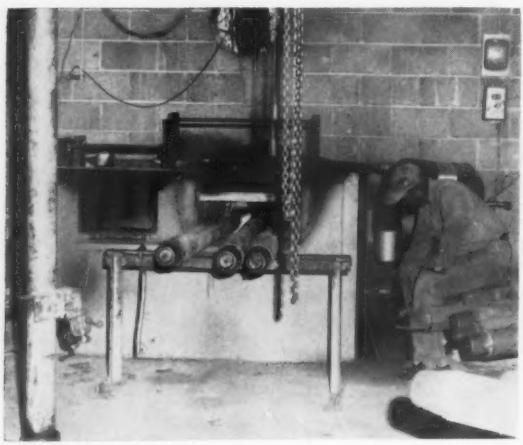
by RAY DAY

DOES a bit dresser really justify its cost? Do machine-forged bits get more footage than hand dressed ones? Is bit transportation cost a negative factor? How about help: can anyone learn the blacksmith work? Are there special places where machine forging is better than, say, hardfacing?

Don Purdue of Morrison, Col., is a man in a good position to answer these questions. Four years ago, he became dissatisfied with the working life of hand forged bits in hard rock. To correct the situation he invested about $5,000 in a 30x40-ft. concrete block building, complete with a power blower, oil-fired forge, and a Bucyrus-Erie No. 8 bit dresser.

Today he wouldn't be without that shop, even if his work took him down into softer drilling country where all the rock he had to contend with was shale and soft sandstone.

According to this Rocky Mountain driller, his shop has cut costs, saved time, and improved the drill-performance ratio of his Bucyrus-Erie 22-W in hard rock to the point where he's competing successfully with percussion-type rotary drillers. Hauling bits from the rig to the shop is no problem, because the 22-W is served by a truck anyway. It's no strain to load blunted bits on the truck, back the vehicle into the shop at night, and unload them with the electric hoist.



Actually, that time is more than compensated for by increased drilling hours at the rig. No time is lost dressing bits in the field. With his system, there's always three or four sharp bits on the truck, tool change time is down to 20 minutes, and the 22-W spends more of its time on shift drilling for pay.

"Look at it this way. Water well drilling is a lot like carpenter work," Purdue explained. "You'd tie an 'incompetent' tag on a carpenter mighty quick if he showed up with nicks in his wood chisel, or a dull saw. But you're doing exactly that when you try to drill granite with bits that aren't perfectly sharp.

"Machine forging is the best answer I've seen to drill sharpening in really hard rock. It beats hand forging. I can prove it by our own records, which show that machine forged tools last nearly twice as long as bits used to do when we sledgehammered them sharp and went home with a broken back every night.

"Hardfacing isn't the answer, either, not in rock. You never do get a sharp penetrating angle. Sure, I know that hardfacing is convenient in softer country. But in this granite the edges chip off, you lose gauge fast, and the bit point blunts too soon.

"With a machine-forged bit, you get an exact job every time. The flares along the bit edge are right, the penetrating angle is sharp enough to do some real cutting, the water courses are opened up the way they should be, and you wind up with a bit that'll make twice the footage some of the hand-dressed jobs do. I've drilled 8 feet with machine-forged bits in granite so hard it dulled other edges in 2 feet."

(Left) To start bit dressing operation, Purdue fires up forge. (Center) Ron Purdue screws anvil over threaded end of bit. This bit is being heated while "on deck" bits at right are preheating.

Keeps "Bit Farm" In Shape

An index to the hard rock nature of Purdue's drilling is the fact that he bought 15 bits when he picked up his new 22-W. Drillers in softer country might find this difficult to believe. But the east slope of the lofty Rockies, just west of Denver where Purdue drills, has some of the most tenacious granite anywhere.

On one particularly tough job went down more than 200 feet in this hard material, then brought in good water from seams and cracks far below. Purdue managed to finish the well with all of his bits dull. This is an exception, because he likes to keep sharp bits on his machine. He turned to with a helper, though, and the 15 bits were in like-new condition 8 hours later.

He's worked out a sharpening system good for 4 bits an hour if there's any quantity. That's a big improvement over one hand-forging job a day which some drillers do in this territory. By doing a better sharpening job, and putting on a sharp bit just as soon as the gauge is down about 3/16-in., Purdue may use two or more bits a shift, but he keeps his footage up in the hard

stuff. Using sharp bits saves reaming, too . . . a time consuming operation. He gets 8 to 20 feet a shift in hard granite; up to 100 in softer materials.

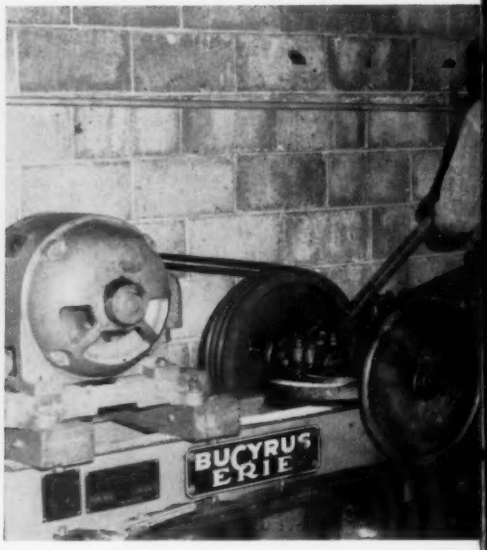
Since his work is almost all 6¾-in. diameter drilling, he bought the Bucyrus-Erie No. 8 bit dresser, customarily used for blast-hole drill bit sharpening. But he uses a few 8-in. bits, too, where it's necessary to case off surface water. He sharpens those on this machine, too.

His "walk around in a circle" system of sharpening works like this:

Step 1, Preheating: Because summer in this part of the country lasts only five months, much drilling weather is cold, often below zero. So the first step in working a dulled bit over is to preheat it. This is partly done by bringing the bit into the shop by truck; unloading it on a rack where it's dry and not as cold as it is outside.

Two bits are laid on a rack, with their drill edges on the firebox ledge, when the fire is lighted. No. 2 diesel fuel, pushed into the firebox by pressure, roars into life. In cold weather water will literally roll out of the steel at this point. Purdue takes this stage easy; warms the steel very slowly.

Step 2, Main Heating: A preheated bit now is thrust into the furnace, allowing flame to lick up about 8 inches above the top of the bit. The fire for this stage is set so that there's just a little smoke rolling around the furnace. Complete combustion, with too dry a fire, tends to reduce carbon in the steel.



(Left) With overhead hoist heated bit is swung from furnace to bit dresser. (Center) On Bucyrus-Erie No. 8 bit dresser, shaping bit to like-new sharp-

The bit is turned with hand tools to get even heating throughout. In about 20 minutes, the forge pyrometer shows a temperature of between 1,800 and 2,000 degrees Fahrenheit. In that intense heat, the bit point takes on a red glow. Suddenly the slick red sheen changes, at the tip, to a velvet-soft cloud, which begins to move down the steel. Also, at this time, blisters begin to appear on the steel surface. Through experience, Purdue has found that this is the exact time to put the steel through the bit dresser.

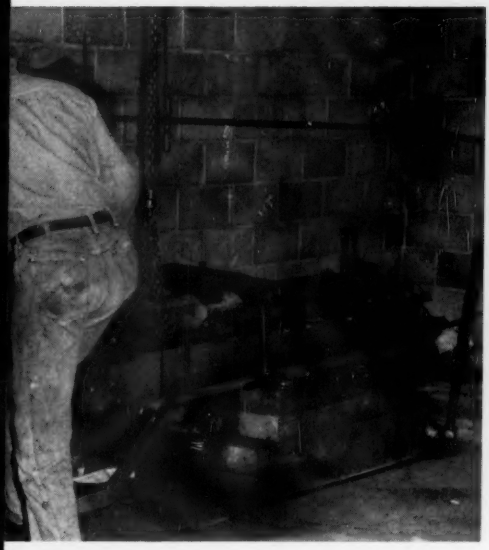
The ring gauge and rear anvil block were already in place on the bit before heating began. Threads are protected on the anvil block by drill compound, a lead-base product which also works wonders on drill tool joints in the field. The bit is picked up by electric hoist, and swung over to the bit sharpener.

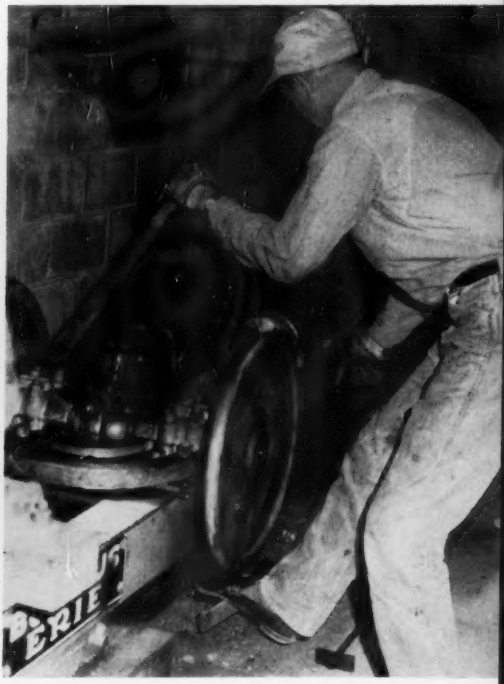
Step 3, Dressing: The electric-powered sharpener now swings into action. Hitting faster and much harder than men could ever swing a sledge, it quickly beats the bit point back to factory specifications. Occasionally the bit is turned by the helper, so the forging head will wear symmetrically. When the bit head brooms out to fit the inside of the ring gauge, the diameter is perfect.

Usually one pass through the sharpener does it. If the diameter didn't quite make it before the steel cooled down, it's reheated for a second pass.

Step 4, Trim Heating: Sharpening a bit in this manner leaves a small amount of trimming to be done along

ness is a quick job. (Right) As wearing surface comes out to full gauge, Purdue knows bit is about ready to finish.





the reaming edges, to leave perfectly sharp corners. For a short time the bit is again swung over and put in the furnace. Reheated to the same temperature as before, the bit now is swung out by hoist and cradled in a holding bar for the trimming job.

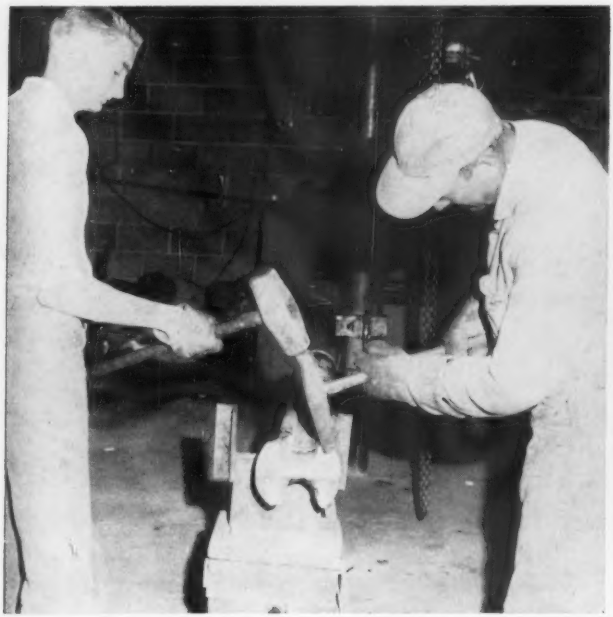
This is done simply by using a sharp steel cutting tool, and sledging it down to cut the excess steel away.

Step 5, First Cooling: Many people mildly disagree with Purdue that this step is necessary. But it's worked well for him. He hasn't cracked or split any bits, so he sticks with it. He simply places the hot trimmed bit on a rack, and lets it cool naturally and completely. It's no problem because he has plenty of room in the shop anyway, and this cooling period lets him move on to the next bit, and work on it while the first is cooling.

Step 6, Tempering: When the forged, trimmed bit has cooled down to dull blackness, and much of the internal heat has left the steel, Purdue again hoists it back into the furnace for tempering. The fire isn't allowed to reach the steel in this step. Slowly the heat builds up again, as the bit is turned frequently until the steel has no magnetism (about 1,475°).

Then the bit is hoisted up and lowered, completely and horizontally, into a floor tank of running water. That turns out a bit point that's hard to the verge of brittleness; so hard a file won't touch it. It's just right for the hardest rock in Colorado.

Purdue emphasized that he doesn't know all there is to know about metallurgy, and that perhaps other drillers might have their own pet ways of heating steel. But this method has worked beautifully for him, has elimi-



nated all breaks, fractures and other such sharpening failures, and turned out bits which drill up to 8 feet of hard granite.

Perhaps the best proof that his idea of a sharpener was a good one came from a good competitor. This driller howled derisively when Purdue brought in the new equipment and built his shop. "That damn thing's no good," he said. "You were a fool to buy it."

A few weeks ago, four years and many wells later, the same man came around. Like good men everywhere, he'd made a little mistake and he admitted it. Now he's worked up a shop rental arrangement with Purdue; he and his helper sharpen *their* bits by machine, too. First crack they took at the thing, they turned out 3 bits in a little over 2 hours.

"That's not so good," Purdue told them. "You'll get better."

"Better!" yelled the other driller. "Why man, that's the most bits I've ever sharpened in 2 hours in my life! They're sharpened better, and it was the easiest work I ever did."

(Left) Ron Purdue wields sledgehammer while his father guides chisel to remove raveled metal from reaming edge while bit is still hot. (Below) Purdue uses full immersion water quench contrary to practice of many blacksmiths. Purdue says this method works best for him.

Additional Tips

Are you in the habit of resocketing your drill line after 40 working hours? Many drillers are. Perhaps this idea may help. Purdue resockets two or three times a year; hasn't had any cable failures since he tried this:

Horsetail your cable only 1½ inches or so . . . *don't* unstrand it right down to the socket throat. Keep the horsetail short. Let solid cable reach up through the socket to the point where you've started unwrapping the strands. Then pour in hot zinc, as usual.

Result: the socket job will last indefinitely longer, Purdue says. Reason: "You've got solid cable going up through that point which otherwise flexes. The strands aren't unwound, so they can't begin to flex and break."

Another tip: use drill compound on tool threads on your drilling; do it for sure if you go to mechanical sharpening. On drilling, the joints won't untwist, but they'll come apart without groaning later on. On sharpeners, it prevents thread freezing.

One last tip. "It'll prove I don't know everything," said Purdue with a grin. Don't build your sharpener shop building with cement blocks. Use steel. The vibrating power of a sharpener will start cracks all over a block building. Purdue found that out the hard way.

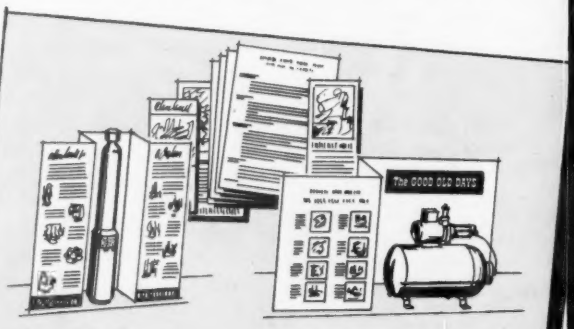
Fairbanks-Morse brings back

THE GOOD OLD DAYS

TO SEND PUMP SALES 'N PROFITS SOARING!

ONLY FAIRBANKS-MORSE COULD SELL 1961 PUMPS AT 1922 PRICES—DURING OUR DYNAMIC **GOOD OLD DAYS** SELLING EVENT! IT'S A SURE-FIRE CINCH TO BUILD TOP DEALER SALES VOLUME...TOP DOLLAR PROFIT...**FOR YOU!**

The GOOD OLD DAYS start in January—everywhere in the U.S.A. for Fairbanks-Morse Pump Dealers! Best of all, it's an exclusive selling event ...designed to make dollars for F-M Dealers only! This event features all the excitement of the GOOD OLD DAYS. The only things different are the pumps. Today, they have 3 times the capacity of the 1922 pumps...bigger in value than any other pumps on the market!



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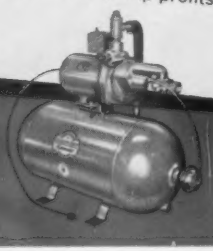
Newspaper ads! National ads! Radio spots! Banners! Streamers! Special giveaways! Colorful Displays! Yours to help you stage the biggest selling event to build pump profits ever designed!

F-M PUMP PRICES WILL BUILD BIGGER SALES!

Submersibles! Ejectors! Packaged home water systems! Pumps from ¼ to 20 HP! The finest Pumps . . . from the widest line of water systems in the world



WATER PURIFICATION EQUIPMENT SPARKS SALES!

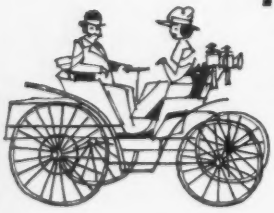
Our Everpure equipment eliminates bacteria, iron, sulphur—automatically! Then dechlorinates and filters! Ask about this special selling item!

SPECIAL DEALER DEALS!

Every dealer will have a special traffic-building deal, tailored for him!

SPECIAL FEATURES!

Our exclusive nylon impeller, for example, will help sell submersibles!



The GOOD OLD DAYS start in January, 1961!
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Fairbanks, Morse
PUMP AND HYDRAULIC DIVISION

A MAJOR INDUSTRIAL COMPONENT OF **FAIRBANKS WHITNEY CORPORATION**

BITS *from the wit sharpener*

Two drunks wandered onto a railroad trestle one dark night.

First drunk: "Boy! Thish is a long flight of stairs."

Second drunk: "I don't mind that so much but I'm having a heck-of-a-time getting used to thish low hand rail."

An elderly school teacher got on a bus and took the only empty seat, next to a man who had had a little too much to drink.

After a while she opened her brief case and opened a map of Korea to prepare her geography lesson for the following day.

The tipsy gentleman gazed steadily at the map for a while and finally addressed the lady in a worried voice:

"Sure you're on the right bus?"

Two rig salesmen sat in a cafe. One requested a loan. "Can I borrow 50 bucks for a week?" he asked.

"Sure," replied the other, counting out the money.

As they rose, the latter said, "Now remember that's only for a week."

"You'll get your lousy money," the first screamed. "Stop hounding me."

A member of a Ladies' Aid Society of a small town went to the bank to deposit, as she told the banker, "some aid money."

Unfortunately the banker thought she said "egg money" and said: "Remarkable, isn't it, how well the old hens are doing these days."

And then he couldn't understand why the woman gathered in her passbook and hurried from the bank.

A souse boarded a street car, tossed himself into a seat and threw an old cigar butt on the floor.

"Hey," yelled the conductor, "the company won't have that!"

"All right, buddy," said the drunk, "you and the motorman share it between you!"

"I didn't say you are a drinking man. I merely said that every time you bend your elbow your mouth flies open."

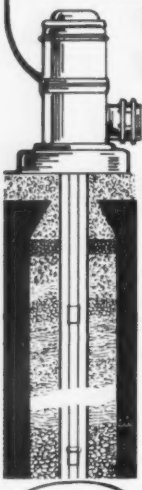
The young lover was trying hard, but the sweet young thing was unimpressed.

"Those lovely hands," he sighed, "Your warm lips. And those beautiful eyes. Where did you get those eyes?"

"They came with my head."

"I've got thirty cows, twelve hogs, six hens, a wife and five kids and a canary bird . . . how big a pump do I need?"

NEW
SC-100
A LIQUID CHEMICAL
for CLEANING and REDEVELOPING
WATER
WELLS



NOW is the time
to put SC-100 in wells—
let it set as long
as possible for best results.

SC-100

- contains no acids
- is non-corrosive
- increases water production
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Costs only
$17.50
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SEND FOR DETAILS
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Clauson . . .

(Continued from page 21)

The business he ran was varied. He installed and repaired complete water systems, reworked old wells and did a small amount of municipal drilling. About 99% of the business, Dick says, has always been farm wells.

Probably the best asset a drilling firm can have is a respected reputation of long standing. Dick feels that he may attribute his thriving business to the reputation set by his father and kept by him. He has certain set ideas on the proper way to run a business. For one, he contracts only one job at a time. This may seem "small time" to some drillers, he says, but it has always kept good will over the 60 years this firm has operated. "Too many contracts on the books can be an unhealthy situation," he adds. The driller who doesn't start a job on the date promised, or turns out poor work because he is rushed, is only hurting his reputation."

Clauson's ethics go further. He does not attempt to bargain but fairly quotes the price per foot plus cost of pipe and materials. He stands behind his work, too, and if there is a valid complaint about one of his wells he repairs the well at no charge.

To give quality, Clauson says that he must work with quality tools and rigs. As far as he is concerned he will stay with Bucyrus-Erie. What he likes best about his 22-W and 10-R is that they are constructed simply with few parts, and those are easy to get at.

Being the pioneer, then, among 10-R owners was a natural decision for Clauson. He didn't feel that he was really taking a chance. Was he hasty in his judgment? His satisfied customers don't think so.

News of the month

New Bucyrus-Erie Distributor Named

W. B. Rom & Son, Inc., Wauwatosa, Wis., has been appointed distributor for water well drill equipment manufactured by Bucyrus-Erie Co., South Milwaukee.

The new distributor's territory includes the Wisconsin counties south of and including Trempealeau, Jackson, Clark, Taylor, Price and Ashland, in addition to the upper peninsula of Michigan.

From its modern facilities at 1060 N. 115th St. in suburban Milwaukee, the Rom organization will handle a complete line of Bucyrus-Erie drills, drilling-fishing tools and parts. The lineup includes the 20-W, 22-W, 60-L, 28-L and 36-L cable tool rigs; the 30-RP and 30-RS truck-mounted rotary and down-the-hole combination machines; and the mobile new 10-R rotary drill.

Founded by the late Walter B. Rom and currently headed by his son, Norm, as president, the new B-E distributor has been in the drill supply and service business for more than a quarter century.

Morrison Co. Offers New Adapter-Seal

The Morrison Co. of Milwaukee, Wis., announces a new product known as the Adapter-Seal for use with submersible pumps.

The Morrison Adapter-Seal incorporates a well seal with built-in junction box for electric cable connection and an adapter for fluid connection to the pump pipe column and the discharge pipe to the pressure tank. It is placed on top of the well and includes a built-in check valve placed at the high point of the flow.

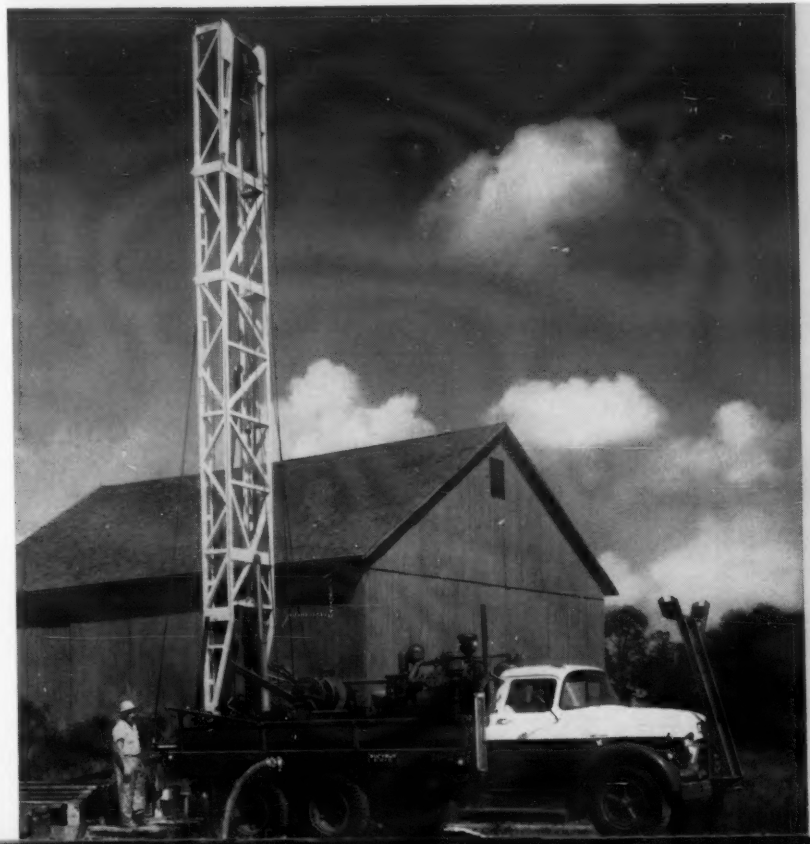
When the pump is idle, water is removed from the freezing zone with natural flow into the well through bleeder orifices and into the tank with gravity drop helped with air pressure from the tank. The check valve is a new development of the Morrison Co. using new materials and guaranteed not to freeze.

Milwaukee Journal Photo

Morrison Adapter-Seal.

Morrison also produces a variety of tank sizes specially designed for underground use which are extra heavy asphaltum coated.

Other new Morrison products de-



Want to keep the rough jobs running smoothly?

Just call your nearby distributor

BEACON SUPPLY COMPANY
P. O. Box 398, Pampa, Texas

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361 Congress Street, Bradford, Pa.

THE BUCKEYE SUPPLY COMPANY
P. O. Box 1231, Zanesville, Ohio

THE BUCKEYE SUPPLY CO. OF KANSAS, INC.
605 South Main St., Eldorado, Kansas

COLORADO PUMP & SUPPLY COMPANY
560 South Lipan St., Denver 23, Colorado

A. L. COX & COMPANY, INC.
202 Marion Street, Mishawaka, Indiana

DEMPSTER MILL MANUFACTURING CO.
Beatrice, Nebraska

DRILLERS SUPPLY COMPANY
P. O. Box 64, Joplin, Missouri

DRILLING & MINING EQUIPMENT CO.
2020 Sacramento St., Los Angeles, Calif.

GILL BIT SHARPENING COMPANY, INC.
P. O. Box 2375, Spartanburg, S. C.

GILL DRILLING EQUIPMENT CO., INC.
Foxon Road (Route 80) (P. O. Box 66)
North Branford, Connecticut

GREAT NORTHERN TOOL & SUPPLY CO.
P. O. Box 957, Billings, Montana

R. R. HOWELL COMPANY
31st Avenue & 4th Streets S.E.
Minneapolis 14, Minnesota

BILL JOHNSON EQUIPMENT CO.
21 South 40th Street, Phoenix, Arizona

LARSON-BECKER COMPANY
111 North River Street, Batavia, Illinois

MIDWEST EQUIPMENT CO.
P. O. Box 3047, Odessa, Texas

THE McJUNKIN CORPORATION
P. O. Box 513, Charleston, West Virginia

NEWFOUNDLAND TRACTOR & EQUIPMENT CO., LTD.
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NORTHERN COMMERCIAL COMPANY
Machinery Division (State of Alaska)
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THE PERRY SUPPLY COMPANY
823 37th First Ave., Birmingham, Ala.

RIG SERVICE & RENTALS LTD.
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W. B. ROM & SON, INC.
1060 N. 115th St., Wauwatosa, Wisconsin

STARDRILL COMPANY
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STRAKER SUPPLY COMPANY
Box 112, Mt. Pleasant, Michigan

TILLSONBURG PIPE & SUPPLY CO., LTD.
Vienna Rd. Hwy. 19,
Tillsonburg, Ontario, Canada

TURNER'S DRILLERS SUPPLY, INC.
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Albuquerque, New Mexico

UNION PIPE & SUPPLY COMPANY
1635 Triplett St., Owensboro, Kentucky

EARL E. VAN EVERY, INC.
P. O. Box 2804, Orlando, Florida

WILSON & BEEMER SUPPLY COMPANY
P. O. Box 188, Marshalltown, Iowa

LOOK over this list and pick out the name of your authorized Bucyrus-Erie distributor—your nearby source for drill parts and factory-trained service. It's the longest list of servicing dealers in the industry — and the best equipped.

These dealers offer 85 percent off-the-shelf parts availability. Important? You know it. It's one of the reasons water well drillers like yourself use more Bucyrus-Erie equipment than all other makes combined.

For more information, write Bucyrus-Erie Company, Drill Division, South Milwaukee, Wisconsin. 12W60

BUCYRUS ERIE®

signed to improve water systems installations and operations include a new "All Rubber" bleeder orifice which is non-corrosive. Complete closure when the pump is running prevents loss of pumping volume and large opening provides fast bleed. It inserts hand tight into a 1-in. straight "T". Also, a new "Vertical Air Unloader" for use with buried tanks and special applications is offered by Morrison.

Above ground discharge is safe because it allows the well to be terminated above the ground level and eliminates the need of cutting into the well casing below grade, a Morrison spokesman noted. This gives positive protection against pollution from surface seepage into the well due to faulty welds or loose connections to well casings below grade line. Some state sanitary well codes specify above ground discharge for certain installations such as schools and multiple family outlets.

For more information on these new products write the Morrison Co., Dept. TD, 120 W. Melvina St., Milwaukee 12, Wis.

Tait Announces 'Champion' Jets

A new line of deluxe quality horizontal jet pumps, incorporating "sculptured" styling and new exclusive construction and performance features, has been introduced by the Tait Manufacturing Co. The line retains the Rapidayton Champion name and includes shallow well, convertible, and deep well models.

The shallow well Champions in-

VALLEY STEEL PRODUCTS COMPANY

Louisiana, Missouri

NEW AND USED WATER WELL CASING

LINE PIPE

ALL SIZES
ALL WTS.

IRRIGATION PIPE

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WATER WELL CASING AND PIPE OUR SPECIALTY

clude both single and two-stage models, with capacities ranging to 2,710 gph, providing the higher capacities required for contemporary rural and suburban installations.

The convertible Champion is available in single stage models, reaches to 90 feet and produces up to 840 gph. It is available with Tait's patented Quick-Connect flange or a threaded flange. The Twin Champion, a two-stage packaged convertible system, reaches to 150 feet, provides pressures to 100 lbs. and capacities to 1,220 gph.

All pumps feature a new open, separate motor mounting bracket, making it possible for motor or pump head to be removed quickly and easily without disturbing tank or installation; new pump body of "Quad-Volute" construction, with streamlined circular volute passages designed for self-priming; shell-cored castings with "micro-smooth" water passages; wear parts that are interchangeable among models.

For more information on the new Rapidayton Champion line, write Tait Mfg. Co., Dept. TD, 500 Webster St., Dayton, Ohio.

Gasoline Engine Powers New 'Sabre-Jet' Pump

Barnes Mfg. Co., Mansfield, Ohio, announced a new self-priming, gasoline engine driven water system, the sixth addition to its Sabre-Jet line. The new Sabre-Jet is completely convertible, has self-priming at all depths and delivers high capacities and pressures according to Barnes officials.

The new model has a new type

multi-vane diffuser which doubles air handling capacity and enables the pump body to retain two-thirds of the water at all times for instant priming. Should the water table fall so that the foot valve becomes completely exposed, this water system reprimes immediately, in either shallow or deep well use, when the water level is regained, says the manufacturer.

Sabre-Jet installation.

The engine-driven Sabre-Jet requires no extra parts and very little effort to convert. A simple transfer of the jet from pump to well pipe is all that is needed for complete conversion from shallow to deep well.

Suggested uses for the gas-engine driven Sabre-Jet water system are for: cottage and camp installations, out buildings on farms, feeding and watering systems for livestock and other application where electricity is unobtainable or impractical.

With operating pressures up to 70 psi, the engine-driven Sabre-Jet is offered in 2 hp with capacities to 2,700 gph and depths to 180 feet.

Detailed specifications and free literature on Sabre-Jet water systems can be obtained from Barnes Mfg. Co., Dept. TD, Mansfield, Ohio.

"Toughest formation I ever ran into!"

Drill Service Engineer Dies

Orla W. Crandall, 71, died Nov. 2 at St. Francis hospital, Waterloo, Iowa. He was a service engineer for the drill division of Bucyrus-Erie Co., South Milwaukee, Wis., and earlier held a similar position with Armstrong Manufacturing Co., Waterloo, Iowa. He retired in 1950 after more than 25 years in the drill business.

New Officers Installed by Michigan Drillers Group

New officers of the Michigan Well Drillers' association were installed Oct. 15 at a board of directors meeting. They are: president, Jim Price, Clarkston, Mich.; first vice president, Jack Allen, Cadillac; second vice president, Al Wesler, Kalamazoo;

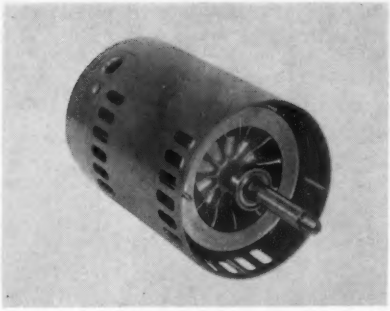
secretary, Carl Ferris, Buchanan; treasurer, Charles Waid, Plymouth.

Plans are being formulated for the group's 1961 convention scheduled for May 25 and 26 at the National Guard Armory, Jackson, Mich.

Uni-Built Motor For Jet Pumps

New jet pump manufacturing ease and flexibility are cited with the introduction of a new motor for the jet pump industry by A. O. Smith Corp. Announcement of the new motor coincided with the 1960 National Water Well Exposition in Pittsburgh, Pa.

Designed for complete integration with the pump it drives, the new deluxe "Uni-Built" uses part of the pump housing in place of the conventional motor end frame. Motor throughbolts are used to secure the motor to the pump.



Smith Uni-Built Motor.

The new "Uni-Built" is rated ⅓ through 1-hp, 3,600-rpm, single or three-phase, and features enclosed capsule starting switch, an exclusive of A. O. Smith. Its dripproof ball bearing design permits either vertical or horizontal mounting.

For more information write A. O. Smith Corp., Electric Motor Div., Dept. TD, 531 N. Fourth St., Tipp City, Ohio.

Did Somebody Goof?

Looks like driller Ed O'Brien of Elgin, Ill., has enough casing to drill several thousand feet of overburden on this job! But things are not always what they seem: there is actually only a 9-ft. length of 16-in. casing in the hole seated on limestone. The rest of the pipe belongs to O'Brien's customer, Marison Co., South Elgin, Ill., which uses the material to make oxygen cylinders. O'Brien's carefully drilled hole bottomed at 150 feet and proved to be a "duster."

BARGAIN *counter*

All advertising in this section is payable in advance. Rates and conditions subject to change without notice. Enclose your check or money order with copy. Rate: $1.00 per line. Minimum charge $4.00. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters. Count spaces and punctuation as one character each. Allow two lines for box number if blind advertisement is desired. Closing date —5th of preceding month. Example — March issue closes February 5th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wisconsin.

DRILLS FOR SALE

Bucyrus-Erie 22-T, used, (s.n. 53002) in fair condition, powered with a 10-hp electric motor has rubber cushioned heel and spudding sheave, split tubular type tool guide less tools and cables. F.o.b. Waukesha, Wis., as is subject to prior sale: $1800.

22-T Bucyrus-Erie (s.n. 14482) used, with 60-cycle electric motor, drill stems, jar bumper and bailer. Priced as is subject prior sale f.o.b. Waukesha, Wis: $2800. Contact: Waukesha Lime & Stone Co., P.O. Box 27, Waukesha, Wis. Phone: LIberty 7-7746.

Schramn 1959 model combination rotary and down-the-hole unit, mounted on a 1959 10-wheel T-800 Ford, International TD-24 aux. power unit, 300′ of 4½″ O.D. drill pipe, B-52-10-35 Mission hammer.

Gus Pech boring machine, 1953 model, on 1950 2-ton Ford, C.O.E. truck with rebuilt engine, 90′ rod, 20″ and 24″ bucket, bailer and tile setter.

Speed Star 71 mounted on Reo truck, priced to sell. Gill Bit Sharpening Co., Inc., P.O. Box 2375, Spartanburg, S. C.

Portadrill T505, 1959, slightly used, mounted on 10-wheel Ford tandem; excellent opportunity. Write to: Christy Hill Builders, Inc., P. O. Box 44, Gales Ferry, Conn.

20-W Bucyrus-Erie drill, serial #75849, without casing reel but with power derrick hoist and spooling device. Mounted on 2-ton 1950 Chev. truck with dual rear wheels. With tools for 6″ holes. Has drill and sand lines. Truck and drill in good condition. Clarence Acker, 3934 S. 41st St., Milwaukee, Wis. Phone: OR 2-5667.

Keystone 22K, serial 10200, double cathead, casing reel, tool guide, 40′ mast, for truck mounting, motor overhauled, $3995. Iry L. Fry, 10211 E. 9th, Spokane 63, Wash., WA 6-0303.

Stone 31, used, mounted '47 Mack, complete string 6″ tools, priced to sell.

Stone 31, used, mounted Ford truck, complete string 6″ tools, priced to sell. Gill Bit Sharpening Co., Inc., P. O. Box 2375, Spartanburg, South Carolina.

When writing advertisers please say you saw it in *The Driller.*

Custom built, all steel jetting machines, truck mounted or trailer mounted with, or without, tools, some have jetting pumps; priced from $875.

Star model 240, truck mounted.

Cyclone model 44, truck mounted with lines.

Ideco #10 with complete tools & cable, excellent condition.

Cyclone #35, factory rebuilt with pump, power hoist & telescoping derrick, truck mounted. A. L. Cox & Company, Inc., 202 W. Marion St., Mishawaka, Ind. Ph. BL 9-3791.

Bucyrus-Erie 24-L, telescoping derrick, trailer mounted, with tools, ready to go to work. $7000. 375-gal. butane tank on trailer, 2—8″ bits, 2—6″ bits, 2¾″, 3¾″ tools, approx. 1,500′ x ¾″ drill line, same of 7/16″ sand line. Cathead and cranerail, dog house. This rig is in Ky. Write: Marr Drilling Co., Box 24, Hesperia, Calif. Phone: Victorville 5-5012.

Cyclone 40 drill, new in '57, A-1 shape, GMC mounted, tools, cables, etc. $2500. C. Enfield, Buffalo, Iowa.

22-W on 2-ton Chev., 2-speed, choose from 2, clean, ready to go, J. Boothby, Miles, Iowa, Phone: OV 2-2455.

Mayhew 1000 rotary, mounted on and powered by 1954 IHC 282 truck, 4—½ x 6 Wheatly pump 150′ 2⅜ Mayhew drill pipe. F.O.B. Minneapolis. $8,000.

Howell 60 band wheel rig, on a 1946 Chevy, power derrick hoist with 21-W steel derrick, apprx. 200′ ⅝ & ⅜ cable, righthand cathead, four cyl. Red Seal engine, F.O.B. Minneapolis. $1,300.

Armstrong 33-W mounted on 1947 Ford, 1947 Ford engine in drill rig, 36′ derrick with new style folding braces and power derrick hoist, complete electric starting, good tires, apprx. 500′ ⅝ & ⅜ cable, complete set of 2 x 3 tools, socket, jars, 4 x 16 stem, 5″ bit, tool wrenches, tightener, pipe tongs, guylines and stakes, catwalks and weathertight tool box. F.O.B. Minneapolis $3,500.

Star 55, 1955 model, on Studebaker 1½ ton, new model B-125 A-C engine 4 cyl. OHV, casing reel, catwalks & lefthand cathead, telescoping 32′ derrick, power derrick hoist, apprx. 500′ ⅝ & ⅜ cable, new paint, good tires, F.O.B. Minneapolis $3,500.

Winter-Wiess 502 rotary, on 1957 Int. R190, machine equipped with hydraulic leveling jacks, 5 x 6 Gardner-Denver mud pump, Allis-Chalmers RO rotary air compressor model 10GB, 350′ 2⅞ drill pipe, assortment of new and used drill bits from 3⅞ to 10″ plus some bit subs, suction and discharge hose with quick coupler, mud pump and turntable recently overhauled, located near Minneapolis $16,500. R. R. Howell Co., 31st Ave. & 4th St. S. E., Minneapolis 14, Minn. FE 1-1301.

DRILLS FOR SALE

22-W, mounted Warford 10-wheeler truck, equipped to drill 5", 6", 8" holes, drilling and fishing tools included, all equipment in very good condition, $5,500; LeClair Well & Pump Co., 181 Sand St., Gardner, Mass., Phone: 821.

20-W (#114930) mounted on 1949 Ford truck.
20-W (#81187) mounted on 1947 International truck.
33-W (#11720) mounted on 1948 Mack truck. Hickory Well Supply Co., Inc., P.O. Box 602, Hickory, North Carolina.

22-W, 1955, on 2-ton Int., tools and cable for 6" and 8" wells. Good condition. $5,000 complete. T. K. Musgrove, Mansfield, Ark., Phone: 29M.

Failing 1500 long mast, kelly, double drum, auto chuck Gardner-Denver pump, drill pipe, $7,500. Box 261, South Milwaukee, Wis.

Failing 1500 heavy-duty, propane power on rig and pump, complete, $8,500. Fred Butler, Box 481, Pueblo, Colo.

Joy 225-W rotary water well drill, mounted on F-800 Ford truck and driven by power take-off, 45-foot hydraulically raised derrick, 20-foot factory built derrick extension, 5 x 6 Gardner-Denver pump, weight indicator, 1,000 feet 3½" tool joint drill rod, subs, drill bits, Baash-Ross 4" x 26' kelly. Rotary table retracts hydraulically to set up through 24" casing. Machine in perfect mechanical condition and ready to go to work. Will mail photo on request. C. B. Willingham, 202 Lawyers Building, Marietta, Georgia. Phone: 428-4926.

Mayhew 1000, good used rig mounted on 1952 L-170 Int., 15' stems, small air compressor, hydraulic leveling jack; Price $8,500. Call or write Jim Lohse, Elbow Lake, Minn.

Speed Star 71 mounted on '48 tandem Ford, 2-speed axles, tools and lines for 6" and 8" work, rig and truck in good mechanical condition, rig has power mast hoist, price: $1,950. Suburban Pump Shop, 3718 Belmont Ave., Youngstown, Ohio, Phone: RI 3-7323.

Bucyrus-Erie drill model 60-L purchased new 1958. Has drilled 2800', mounted on very good Mack truck, priced to sell; Artesian Well & Supply Co., 195 Anthony St., East Providence, R. I., Tel: GEneva 4-0198.

DRILLS FOR SALE

20-W, (S.N. 105511), new June 1953, truck-mounted, 36' telescoping derrick, engine overhauled after last job, all new bearings and repairs 1 year ago. Includes 600' of ⅜" sand line, 600' of ⅝" drill line, complete string of 6" tools, socket stem, 2 bits, drive clamps, tool wrenches, chain tongs, B & C tool tightener. Ready to drill. Price: $3,500. Contact Ed Kranz Well Co., 5214 W. Villard Ave., Milwaukee, Wis., Phone: HO 6-1579.

Bucyrus-Erie 1-W, 1958, with lines, complete rotary attachments, 140' 2¾" drill pipe, 3-stage Moyno mud pump with hoses and circulating tank, on GMC 6 x 4 truck.

21-Ws, 2 machines, both with 32' 1-piece derrick, Le Roi engine, both repainted, rebushed, no truck.

21-Ws, 2 machines, both with 32' 1-piece derrick, one with Wisconsin air-cooled engine, on GMC truck, other with Le Roi engine, on Diamond-T truck, both rebushed and repainted.
20-W, 1955, 36' telescoping derrick, Hercules engine, power derrick hoist, on 1951 Chev.
20-W, 1950, 32' 1-section derrick, casing reel, catheads, on 1951 Chev.
22-W, 1955, tool guide on 1950 White, machine overhauled, repainted.
Cyclone 42, 1952, Continental engine, telescoping derrick, automatic feed, overhauled, repainted, no truck.
28-L, 1952, trailer mounted, 6 MZA Waukesha engine, tool crane.
36-L, 1955, tandem mounted, 145 GK Waukesha engine, tool crane.
36-L, 1948, equipped with single axle, A-Leg fittings, tool crane, 140 GK Waukesha engine.
48-L, 1952, tandem axle with air brakes, 70' tripod derrick, tool crane. WAKDU Waukesha diesel engine, machine has been used to drill only 6,000 feet of hole. Buckeye Supply Co., Box 1231, Zanesville, Ohio.

MISCELLANEOUS FOR SALE

Selling hundreds of cable drilling tools, 4 to 20 inch, hoists, wrenches, rope sockets, stems, jars, bits, large bailers, $65,000 stock used fishing tools, star bits, bit gauges, reamers, tool tighteners, blind boxes, hundreds of items. Write for list, or visit the largest tool yards in the east. Tri State Tool Co., Box 827, Parkersburg, West Va.

MISCELLANEOUS FOR SALE

Bucyrus-Erie No. 12 electric bit dresser, less motor with furnace and blower, less fire bricks, 2 bit quenching racks and misc. dollies and dies for 6" bits, spare parts also included. Gill Bit Sharpening Co., Inc., P. O. Box 2375, Spartanburg, S. C.

New and used pipe and casing. Also used well drilling rigs. Tom's Well Driller Supplies, 1225 Lancaster Ave., Reading, Pa. Phone: SPruce 7-6331.

Magnets, pull over 125 lbs., width 3¼", height 4 3/16". will pick up carbide insert. You can't afford to be without one, $20 ea. postage prepaid, satisfaction guaranteed. J. Bucci, 4001 Perkiomen Ave., Reading, Pa.

New water well casing, 3/16" or ¼" taper threads, free delivery N. J., N. Y., N. Eng. states. Morris County Pipe Co., Inc., Rt. 46, Pine Brook, N. J. Call collect: CApital 6-8343. All sizes, all weights.

2—Allis-Chalmers 8 x 6 horizontal centrifugal pumps, 1400 GPM vs. 430' TDH, 1200 GPM vs. 365' TDH, each pump mounted on base and connected to a 250-HP and 200-HP, 1750-RPM, 3/60/220 motors. Both units excellent condition, each with manual compensating starter, disconnect switch, 8" check, and 6" gate valve. Price of 250-HP unit — $4,200; 200-HP unit, $3,900; F. O. B. Princeton, N.J., Wm. Stothoff Co., Inc., Flemington, N. J.

500' of 8¼" I.D. new Republic well casing, random lengths, T. & C., 17:80# per foot, priced to sell; Artesian Well & Supply Co., 195 Anthony St., East Providence, R. I. Tel: GEneva 4-0198.

New and used water well casing, 4¼", 5⅝", and 6¼", threaded and/or plain end. For lowest prices, write or wire Keystone Pipe & Supply Company, Butler, Pennsylvania Phone 73-714.

EQUIPMENT WANTED

Rig about size of 35 Cyclone with casing reel for clean out and pump service. Ray Murphy, Ph. 4373, Paole, Indiana.

MISCELLANEOUS FOR SALE

Ford model F industrial engine, 6 cyl. OHV, 223 in. displacement, 86 hp @ 2,800 rpm, starter, generator, PTO clutch and 4-speed transmission, 22" wide x apprx. 6' long 42" high, run only 80 hours. New price (engine only) $1,543, F.O.B. Minneapolis $1,050.

Ford 1951 water truck, 800-gal. vacuum fill tank, PTO winch with cable, very clean, good tires, F.O.B. Minneapolis $1,200.

Howell swivel socket 1¾ 8API "fair" $60.

Howell swivel socket 1¾ 8API "good" $69.

Set, Spang jars 2¾ x 6 x 1¾ 8API $111.

Set, Acme Fishing jars 30" stroke 2¼ 8 $180.

Drill stem 3¼" x 11' 2 x 3 7API (Welded Ends) $20.

Drill stem 4" x 16' 3½ 7API $130.

Drill stem 3" x 18' 2⅝ 7API $100.

Sand pump 4" x 12' regular bottom $70.

Swan underreamer to run in 5" pipe 5½" cutters 2 x 3 7API $375.

Swan underreamer to run in 6" pipe 8¼" cutters 2¾ x 3¾ 7API $400.

Set tool wrenches 1¾ sq. ea. $19.

Tool tightener for 4" tools $14.

Pair screw jacks 2" x 12" ea. $10.

Casing block w/swivel hook 10-ton $50.

Set drive clamps 5" sq. XH pattern $200.

Medium 6¾ 3-cone retip $35.

Medium 6¾ 3-cone rerun $45.

Medium 7-7/7 3-cone retip $45.

Set 6¾ AC-600 3-blade insert bits $20.

Set 5" AC-600 3-blade insert bits $10.

6—14" casing line blocks, new ea. $40.

These used tools subject to prior sale. R. R. Howell Co., 31st Ave. & 4th St., S.E., Minneapolis, Minn. FE 1-1301.

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Mfg. reps. calling on wholesale water well accounts in Ohio, Penn., New York, Iowa, Mo., New England, and western United States. Straight commission, patented items. Send complete list of lines handled and territory preference. Reply confidential. Will answer each reply. Write: The Driller, Box 792, South Milwaukee, Wis.

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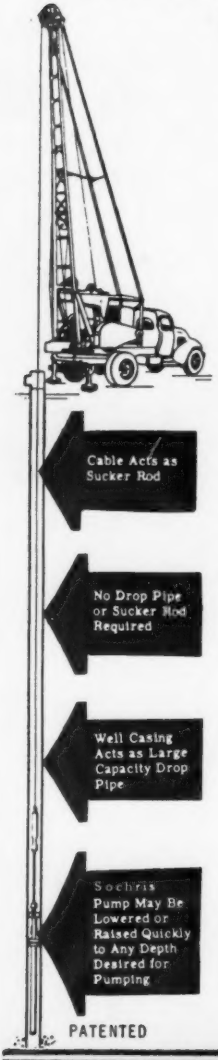
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Sochris Pump May Be Lowered or Raised Quickly to Any Depth Desired for Pumping
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No drop pipe . . . No sucker rod needed . . . pump operates by cable from rig . . . automatically seals off casing . . . gives a real clean-out . . . and accurate capacity test.

You can set this pump and begin clean-out within ten minutes after you finish drilling. Available for all casings 3" and up . . . high capacities too.

What Users Say

"The 4" model RC well driller's pump, which we purchased from you last January, has been very satisfactory on the one large project which we were using it on. This project involved the water supply wells for eighteen missile sites, and the pump was very useful in developing and testing the small wells required on this project.

The driller operating the rig was very pleased with the ease of installation, and it not only saved time, but made the job much simpler."

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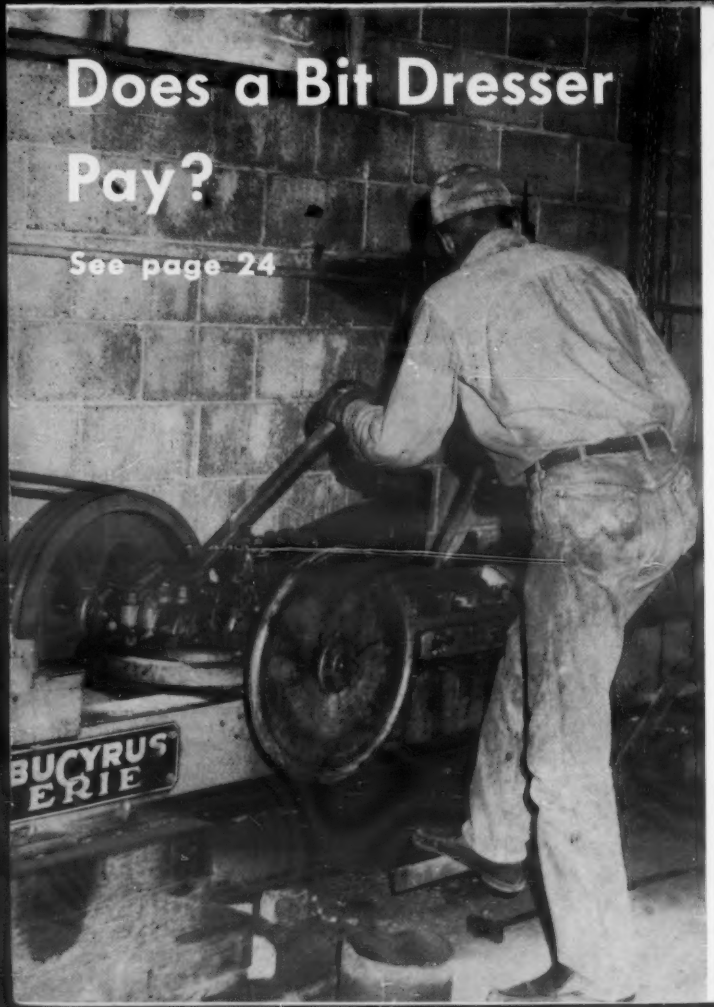

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